Surgical Repair of a Hepatic Artery Aneurysm: A Rare Case Report

Hepatik Arter Anevrizmasının Cerrahi Tamiri: Nadir Bir Olgu Sunumu

Kemalettin ERDEM,[a]
Onursal BUĞRA,[a]
Emine DAĞISTAN,[b]
Orhan BOZOĞLAN,[c]
Ümit YAŞAR TEKELİOĞLU,[d]
Akçan AKKAYA,[d]
Bahadır DAĞLAR[a]

Departments of
[a]Cardiovascular Surgery,
[b]Radiology,
[d]Anesthesiology and Reanimation,
Abant İzzet Baysal University Faculty of Medicine, Bolu
[c]Department of Cardiovascular Surgery,
Kahramanmaraş Sütçü İmam University Faculty of Medicine, Kahramanmaraş

Geliş Tarihi/*Received:* 16.10.2012
Kabul Tarihi/*Accepted:* 02.01.2013

This case report was presented in Turkish Society for Cardiovascular Surgery 12th National Congress, 8-11 November 2012, Antalya, Turkey.

Yazışma Adresi/*Correspondence:*
Kemalettin ERDEM
Abant İzzet Baysal University Faculty of Medicine,
Department of Cardiovascular Surgery,
Bolu,
TÜRKİYE/TURKEY
drkemalettincvs@yahoo.com

doi: 10.9739/uvcd.2012-32357

ABSTRACT Hepatic artery aneurysms (HAAs) account for approximately 20% of splanchnic artery aneurysms (SAAs). Most of the SAAs are generally asymptomatic and detected incidentally. Rupture of HAA is the first clinical manifestation in 80% of the cases. A 54-year-old female patient whose HAA was incidentally detected with abdominal ultrasonography two years ago, was referred to our clinic. Celiac artery angiography demonstrated a HAA in 4x6 cm diameters arising from the common hepatic artery. Abdominal wall opened through a median incision. After 5000 IU of systemic heparinization, proximal hepatic, distal hepatic and gastroduodenal arteries were clamped. Aneurysm was removed and saphenous vein interposition was performed by end-to-end anastomosis. Gastroduodenal artery end-to-side anastomosis was performed through the interposition of a 2 cm saphenous vein. The patient was discharged uneventfully on the postoperative eighth day.

Key Words: Aneurysm; splanchnic circulation; hepatic artery aneurysms

ÖZET Hepatik arter anevrizmaları(HAA) intraabdominal organ anevrizmaların yaklaşık %20'sinden sorumludur. Batın içindeki organ anevrizmalarının çoğunluğu asemptomatiktir ve tesadüfen tespit edilir. Batın ultrasonografi sırasında tesadüfen HAA tespit edilen 54 yaşındaki kadın hasta kliniğimize kabul edildi. Çölyak arter anjiyografisinde ana hepatik arterden kaynaklanan 4x6 cm çapında HAA tespit edildi. Batın median kesi ile açıldı. Takiben 5000 IU sistemik heparinizasyon yapıldı ve proksimal, distal ve gastroduodenal arterler klemplendi. Anevrizma çıkarıldı, 6 cm uzunluğunda safen ven ile uç-uca anastomoz yapıldı. Gastroduodenal arter 2 cm'lik safen ven interpoze edilerek uç-yan anastomoze edildi. Hasta post operatif 8. gün şifa ile taburcu edildi.

Anahtar Kelimeler: Anevrizma; splanknik dolaşım; hepatik arter anevrizması

Damar Cer Derg 2013;22(1):45-7

Splanchnic artery aneurysms (SAA) are seen rarely, but this entity is clinically important.[1] Hepatic artery aneurysm (HAA) may be seen as the true aneurysms or pseudoaneurysms. True HAA is the fourth most common site of splanchnic artery aneursym, following infrarenal aorta, iliac artery and splenic artery.[2] HAA accounts for approximately 20% of SAA, 80% of which are extrahepatic and solitary.[3,4] The rest are intrahepatic.[1-5] It is known that 63% of HAAs involve the common hepatic artery. False aneurysms mostly occur in the right hepatic artery.[6] Previously, HAAs were known to be frequently caused by mycotic infections and inflammation.[7,8] However currently, atherosclerosis is accepted as the most common cause

of HAA.[7,9] Most SAAs are generally asymptomatic and usually found incidentally.[10] Rupture of HAA is the first clinical manifestation in 80% of the cases.[6] Here, we report a rare case of a patient with a HAA who was treated succesfully.

CASE REPORT

A 54 year-old female patient whose HAA was incidentally detected with abdominal ultrasonography two years ago, was referred to our clinic. She had left upper quadrant pain. In the physical examination; tenderness, rebound, or distension was not observed in all four quadrants. Vital findings included heart rate of 82 bpm, arterial blood pressure of 110/60 mmHg. Laboratory tests revealed; hemoglobin of 12.5 gr/dl, ALP of 25 units/L, ALT of 18 units/L, AST of 17 units/L, creatinine of 0.9 mg/dL and total bilirubin of 0.6 mg/dL. Celiac angiography demonstrated a HAA in 4x6 cm diameters, arising from common hepatic artery (Figure 1).

We opened the abdominal wall through a median incision from umbilical region up to xiphoid. Sharp and blunt dissection was used to reach the free proximal hepatic artery, distal hepatic artery and gastroduodenal artery (Figure 2). After 5000 IU of systemic heparinization, proximal hepatic, distal hepatic and gastroduodenal arteries were clamped. Aneurysm was removed and saphenous vein interposition (6 cm) was performed in the form of end-to-end anastomosis. In addition, gastroduodenal artery end-to-side anastomosis was performed

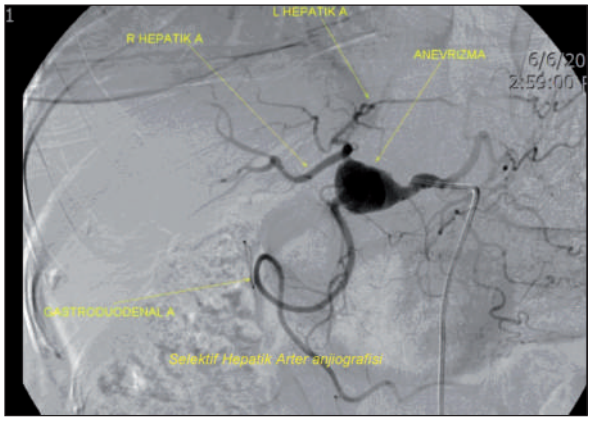

FIGURE 1: Selective celiac angiography.

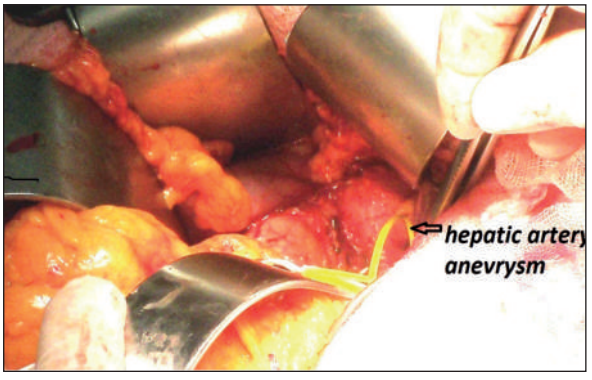

FIGURE 2: Hepatic artery aneurysm.

through the interposition of a 2 cm saphenous vein. In the postoperative period, AST and ALT increased up to 1600 and 100U/L, respectively. By time, they decreased to normal values. The patient was discharged on the postoperative eighth day uneventfully.

DISCUSSION

Most cases of the HAAs remain asymptomatic and are commonly diagnosed as an incidental finding on the abdominal ultrasonography or computerized tomography. The first clinical manifestation is the rupture of the aneurysm in most of the HAA cases. The other clinical signs are abdominal pain and gastrointestinal hemorrhage.[2] The classic triad of HAA are epigastric pain, hemobilia and obstructive jaundice; just about one third of the patients admit to hospital with these complaints. In the present case, the patient was diagnosed with the complaint of abdominal pain two years ago.

There are different etiologies for HAAs. In the etiology, mycotic aneurysms were accused for most of the HAA cases previously, but currently, atherosclerosis is reported to be the most common cause of HAAs.[2,5,11] In addition, other causes of HAAs such as medial degeneration and congenital fibrodysplasia are common.[7,9] In our case, any causes other than atherosclerosis were not detected. Moreover, syphilis, tuberculosis or Behcet disease were not detected as well.

When the diameter of a HAA is greater 2 cm, intervention is recommended.[10] The most advised

option of the treatment is percutaneous transcatheter embolization (PTE).[12,13] PTE is mostly preferred for intrahepatic or pseudoaneurysms.[10,14] Another option is the ligation. Ligation is only recommended when the aneurysm is solely located in the proximal parts of common hepatic artery because the gastroduodenal artery can provide collateral blood supply to the liver from the superior mesenteric artery.[7,13] If the aneurysm is located at more distal regions, ligation is generally contraindicated because of the liver necrosis risk. In this instance, liver can be assessed intraoperatively for development of cyanosis. Options other than ligation include aneurysmorrhaphy of aneurysm, excision aneurysmorrhaphy of aneurysm with graft interposition, excision with splenohepatic anastomosis and aortohepatic bypass.[15] In our case, HAA was located at the bifurcation of right or left hepatic arteries. Thus we carried out surgıcal repair of the HAA by using saphenous veins (Figure 3).

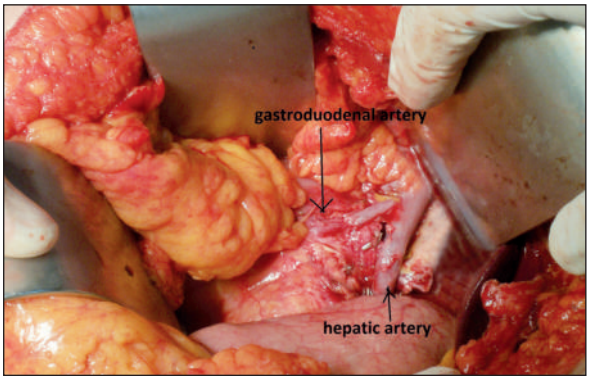

FIGURE 3: Hepatic artery aneurysm repair with a saphenous vein interposition.

In conclusion, HHA can be complicated by rupture and medical endovascular and/or surgical treatment can be used to control the aneurysm depending on the diameter of aneurysm and hemodynamic status of the patients. The rupture of HAAs may lead to a life-threatening situation. Thus, for appropriate patients, endovascular treatment should be considered to be a first choice of treatment of HAA, but open surgery is inevitable in case of either failure or lack of availability of the endovascular procedures.

Conflict of Interest

Authors declared no conflict of interest or financial support.

REFERENCES

1. Halaby H, Al-Mehaidib A, Al-Otaibi L, Al-Nassar S, Rossi L. Ruptured hepatic artery aneurysm in a child. Ann Saudi Med 2000; 20(5-6):427-9.
2. Türkvatan A, Ökten RS, Kelahmet E, Özdemir E, Ölçer T. Hepatic artery aneurysm: imaging findings. Journal of Ankara University Faculty of Medicine 2005;58(2):73-5.
3. Laganà D, Carrafiello G, Mangini M, Dionigi G, Caronno R, Castelli P, et al. Multimodal approach to endovascular treatment of visceral artery aneurysms and pseudoaneurysms. Eur J Radiol 2006;59(1):104-11.
4. Bachar GN. Belenky A. Lubovsky L, Neuman-Levine M. Sonographic diagnosis of a giant aneurysm of the common hepatic artery. J Clin Ultrasound 2002;30(5):300-2.
5. O'Driscoll D, Olliff SP, Olliff JF. Hepatic artery aneurysm. Br J Radiol 1999;72(862):1018-25.
6. Shanley CJ, Shah NL, Messina LM. Common splanchnic artery aneurysms: splenic, hepatic, and celiac. Ann Vasc Surg 1996;10(3):315-22.
7. Arneson MA, Smith RS. Ruptured hepatic artery aneurysm: case report and review of literature. Ann Vasc Surg 2005;19(4):540-5.
8. Schroeyers P, Lismonde M, Vermonden J, Six C. Management of hepatic artery aneurysm. Case report and literature review. Acta Chir Belg 1995;95(2):89-91.
9. Thomas DE, Leon LM. Hepatic artery aneurysm rupture: case report, imaging findings, and literature review. S D J Med 1998;51(11):413-6.
10. Pasha SF, Gloviczki P, Stanson AW, Kamath PS. Splanchnic artery aneurysms. Mayo Clin Proc 2007;82(4):472-9.
11. Gupta S, Cope V. Hepatic artery aneurysm as a cause of gastrointestinal blood loss. Br J Radiol 1972;45(538):726-8.
12. Sutton D, Lawton G. Angiographic diagnosis of aneurysms involving the hepatic artery. Clin Radiol 1973;24(1):43-8.
13. Man CB, Behranwala KA, Lennox MS. Ruptured hepatic artery aneurysm presenting as abdominal pain: a case report. Cases J 2009;2:8529.
14. Reidy JF, Rowe PH, Ellis FG. Splenic artery aneurysm embolisation-the preferred technique to surgery. Clin Radiol 1990;41(4):281-2.
15. Dougherty MJ, Calligaro KD. Visceral artery aneurysms. In: Ascher E, ed. Haimovici's Vascular Surgery. USA: Blackwell Publishing; 2004. p.902-12.